

LENS HOLDING STRUCTURE FOR
WALL-MOUNTED SURVEILLANCE CAMERA

FIELD OF THE INVENTION

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The present invention relates to a lens holding structure for wall-mounted surveillance camera, and more particularly to a lens holding structure for surveillance camera that is a modification of a
10 conventional lens holding structure for a ceiling-mounted surveillance camera to allow mounting of the surveillance camera on a wall.

BACKGROUND OF THE INVENTION

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Surveillance and monitoring systems have been widely employed in many different places to watch over entrance and exit of people and goods thereat to ensure the safety of the general public. Basic apparatuses included in
20 surveillance and monitoring systems are surveillance cameras and monitors electrically connected to a main control unit. Images taken by each surveillance camera are sent to the main control unit and displayed on the monitors for viewing by security guards.

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The surveillance cameras may appear in many different

forms, and may be generally divided into two types according to the mounting manners: surveillance camera with mounting rack and surveillance camera without mounting rack. The latter may be further divided into
5 a ceiling-mounted and a wall-mounted type. Fig. 1 shows a conventional ceiling-mounted surveillance camera, which includes a base 10, a revolving seat 11, a lens carrier 12, and a lens 13. The lens 13 is fixedly connected to the lens carrier 12, and the lens carrier
10 12 is locked at two opposite sides to the revolving seat 11 using two clamp screws 14, 15. The revolving seat 11 is screwed to the base 10 and adapted to turn relative to the base 10 within a range without separating from the base 10. The lens 13 must be so positioned that an
15 image of an upright person or object taken by the lens 13 may be displayed on the monitors in a normal state, that is, in the same upright condition. By turning the revolving seat 11 toward a desired direction, the lens 13 may be aimed at an area to be watched over, so that
20 the purpose of surveillance is achieved. A clear hood 16 is connected to a top of the base 10 to protectively enclose the other components therein.

When the above-structured ceiling-mounted surveillance
25 camera is directly mounted to a wall surface, any turning of the revolving seat 11 would result in deformation of

the image taken by the lens 13. The deformed image shown on the monitors stops the security guards from quickly and correctly judging the actual state in the surveillance area from the monitors.

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Currently, there are many wall-mounted surveillance cameras available in the market. Basically, these wall-mounted cameras must have a lens fixedly aimed at a desired direction without being turned, in order to
10 take images free of any deformation.

Fig. 2 shows a conventional wall-mounted surveillance camera, which has a base 20, a pair of mounting lugs 21 provided in the base 20, a first swing seat 22
15 angle-adjustably mounted on the mounting lugs 21, a second swing seat 23 angle-adjustably mounted on the first swing seat 22, a lens 24 fixedly mounted on the second swing seat 23, and a hood 25 connected to a top of the base 20. The first and the second swing seat 22,
20 23 swing in two orthogonal directions, so that the lens 24 may be aimed at any desired direction. However, the base 20 and the hood 25 must be large enough to provide a sufficient space between them for mounting the first and the second swing seat 22, 23 therein. Therefore,
25 the wall-mounted surveillance camera of Fig. 2 has a relatively large volume and is quite noticeable when it

is mounted on the wall.

SUMMARY OF THE INVENTION

5 A primary object of the present invention is to modify the conventional lens holding structure of a ceiling-mounted surveillance camera, so as to provide a lens holding structure suitable for a wall-mounted surveillance camera.

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To achieve the above and other objects, the lens holding structure for wall-mounted surveillance camera according to the present invention includes a lens carrier that may be freely turned and inclined to enable
15 adjustment of an image taken by the camera to a normal state without deformation and accordingly ensures correct surveillance via the camera.

The lens holding structure for wall-mounted
20 surveillance camera according to the present invention mainly includes a base, a revolving seat, a fixing ring, a lens carrier, and a lens. The lens is fixedly mounted on the lens carrier, and the latter is upward extended through the fixing ring to turnably locate therein using
25 three adjusting screws. The fixing ring is connected to the revolving seat via two opposite clamp screws, and

the revolving seat is rotatably screwed to the base. By adjusting the position of the lens carrier, the surveillance camera may take images that are not deformed.

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The lens carrier includes an annular groove provided on an outer peripheral wall. The three adjusting screws are extended through the fixing ring into the annular groove, so that the lens carrier is securely located in
10 the fixing ring without the risk of separating therefrom.

BRIEF DESCRIPTION OF THE DRAWINGS

15 The structure and the technical means adopted by the present invention to achieve the above and other objects can be best understood by referring to the following detailed description of the preferred embodiments and the accompanying drawings, wherein

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Fig. 1 is a perspective view of a conventional ceiling-mounted surveillance camera;

Fig. 2 is a partially exploded perspective view of a
25 conventional wall-mounted surveillance camera;

Fig. 3 is an exploded perspective view of the present invention;

Fig. 4 is an assembled perspective view of the present
5 invention;

Fig. 5 is a sectioned side view of Fig. 4; and

Fig. 6 is a sectional view taken along line 6-6 of Fig.
10 5.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please refer to Figs. 3 and 4 that are exploded and
15 assembled perspective views, respectively, of a lens
holding structure for wall-mounted surveillance camera
according to the present invention. As shown, the
present invention mainly includes a base 30, a revolving
seat 40, a fixing ring 50, a lens carrier 60, a lens 70,
20 and a hood 31.

Please also refer to Fig. 5 that is a sectioned side view
of the present invention in an assembled state. The
revolving seat 40 is screwed to the base 30 and adapted
25 to rotate relative to the base 30, and the lens 70 is
connected to the lens carrier 60. The fixing ring 50

is an annular member defining a round opening 51 at a central portion thereof, and is located in and connected to the revolving seat 40 via two opposite clamp screws 52. The lens carrier 60 has an upper part extended
5 through the round opening 51 of the fixing ring 50, and is provided along an outer peripheral wall of the upper part with an annular groove 61, which is invisibly located at an inner side of the fixing ring 50. As can be seen from Figs. 3 and 6, the lens carrier 60 is
10 prevented from separating from the fixing ring 50 by radially extending three equally spaced adjusting screws 53 through the fixing ring 50 into the annular groove 61. When the three adjusting screws 53 are fully tightened against the lens carrier 60, the latter is
15 firmly fixed in place in the round opening 51 of the fixing ring 50.

The base 30 is adapted to mount on a wall surface using screws (not shown). By turning the revolving seat 40
20 relative to the base 30, and adjusting an inclination of the fixing ring 50 relative to the revolving seat 40, it is possible to direct the lens 70 toward any desired direction to cover a desired surveillance area. Then, before the adjusting screws 53 are fully tightened
25 against the lens carrier 60, the latter may be turned relative to the fixing ring 50 until an image taken by

the lens 70 is in a normal state, that is, without any deformation. Finally, the adjusting screws 53 are tightened to fix the adjusted lens carrier 60 in place and complete the installation of the surveillance
5 camera.

A surveillance camera having the above-described lens holding structure is characterized in that the lens 70 is rotatably adjustable to take an image in a desired
10 direction. To enable the lens 70 to aim at any direction for desired surveillance, the surveillance camera must be able to always allow adjusting of an inclination of the lens 70, and rotating of the revolving seat 40. Since the fixing ring 50 may be pivotally turned about
15 the clamp screws 52 relative to the revolving seat 40, the lens 70 is allowed to change its inclination. Meanwhile, since the revolving seat 40 may be rotated relative to the base 30, the lens 70 could be adjusted to aim at any direction.

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When the lens 70 is able to take an image in the normal state before the revolving seat 40 has been rotated, any rotation of the revolving seat 40 would result in deformation of the image taken by the lens 70. However,
25 by turning the lens carrier 60, it is still possible to restore the deformed image to the normal state. It is

noted the lens carrier 60 and the revolving seat 40 are turned by the same angle but in two opposite directions during adjusting the lens 70.

5 The wall-mounted surveillance camera having the above-described lens holding structure may have an overall volume similar to that of the conventional ceiling-mounted surveillance camera shown in Fig. 1, and smaller than that of the general commercially available
10 wall-mounted surveillance camera as shown in Fig. 2. Therefore, the surveillance camera of the present invention is not so noticeable after it is mounted on the wall. Moreover, the wall-mounted surveillance camera of the present invention has a base 30 and a
15 revolving seat 40 similar to that of the ceiling-mounted surveillance camera, and may therefore be manufactured with simplified process and at reduced cost, which advantageously increases the surveillance camera's competition ability in the market.